



From the Program Director – Jim Goodrich, VP & Dep. PD

“The Challenges of a New Program”

• It is hard to believe that we are approaching the two-year mark since the award of the NPOESS program. We have made great progress during these last two years and we should be proud of our accomplishments. I wanted to have the opportunity to discuss the challenges we have faced and will continue to face as we develop the NPOESS program.

• The four basic challenges a new program faces are financial, schedule, technical, and political, which are tightly entwined. One of the first challenges a new program typically encounters is governmental change of planned program funding. Most of the new space programs, I'm familiar with, have had funding reductions during the first few years of the program. It is easier for the government to take money from a new program than it is from a program that is in the middle of its development. We encountered this last year when our FY04 through FY07 funding was reduced. This caused our significant replan of the program. The IPO and contractor team stepped up and developed a very solid replan of our baseline program. This took an intensive effort from everyone, because in parallel, we had to continue with the execution of the current baseline to keep the program on track. However, this will not be the last time we will have to address budget and funding constraints. This is just part of the life of any government development program. What you may not know is that the IPO and contractor management continuously worked to protect the current and planned program funding. Although changes can still occur, our NPOESS FY 05 and FY 06 funding looks firm at our planned value.

• The replan is a good example of how the four challenges interplay. It would have been politically difficult to move the NPP launch date very much because of the impact to the science continuity mission as well as the reduction in the risk mitigation for NPOESS. Likewise, moving NPOESS C1 impacts both the DOC and DOD users of our mission data. The NPOESS replanned baseline schedule had to balance 1) the political implications of new NPP and NPOESS launch dates, with 2) the technical, schedule and cost risks in compressing the program schedule, and with 3) the overall cost and funding impacts of the new program baseline. Our IPO/contractor team succeeded in this challenge with an executable new baseline.

• We have had significant technical challenges with our sensor developments. Every new program faces tough problems in developing new mission payloads and NPOESS is no exception. The payloads we are developing will provide significant (Cont'd, p.2)



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IPO Insight - Lt Col Keith Gilmore, IPO Program Control

“NPOESS Leadership – Why I stick around”

• I have read countless articles about what makes an effective leader. What I have learned is an effective leader does not necessarily need to be someone who fits into what is now commonly thought of as a great leader. Harry Truman did not have one ounce of charisma, yet he was among the most effective Presidents in U.S. history. Some of the best leaders I have worked for were not stereotypical leaders. They have ranged from extroverted to nearly reclusive, easygoing to controlling. What made them all effective is that they followed the same eight principles (as so appropriately identified by Peter F. Drucker):

- Ask - What needs to be done?
- Ask - What is right for the enterprise?
- Develop action plans
- Take responsibility for decisions.
- Take responsibility for communicating.
- Focus on opportunities, not problems.
- Make meetings productive.
- Think and say “we”.

• I will throw in one more indicator of great leadership (forgive me Mr. Drucker). I think a simple way to judge who is a great leader is to



determine the number of people who would follow him or her out the door or stay with the boss when things look bleak.

• As my career in the Air Force draws to a close, I have felt that unwavering loyalty to the leadership (both Government and Contractor) of the NPOESS program. I am not eloquent enough to appropriately convey how deeply they have touched my life by making work fun and engaging. They always set high standards and pushed for better than average results. At the same time, they understand that results are achieved not because they have the perfect strategy, but because we, who work for them, feel empowered to do our very best. The NPOESS leaders also realize that they get far better results by not barking orders (sorry for slipping into military vernacular), but by making us understand and embrace their ideas while listening to our contributions.

• As my career in the Air Force draws to a close, I look upon the last four years in NPOESS as the best in my professional life. I have taken away many lessons that I know I will carry throughout the rest of my professional career. I hope that most, if not all of you will someday be able to look back at your time on NPOESS with similar heartfelt feelings.

Upcoming Events:

- 18 Aug: DMSF Constellation Sustainment Advrsy Team (CSAT), Vandenberg AFB CA
- 18-19 Aug: NPOESS Monthly PMR, IPO, Silver Spring MD (NOTE: Last time here)
- 20 Aug: Lvl 2 Caucus, IPO, Silver Spring MD
- 23-27 Aug: NPOESS Operational Algorithm Team (NOAT) Mtgs, Raytheon, Aurora CO
- 24-26 Aug: IDPS/FTS Build 1.3 Critical Design Walk-thru (CDW) Pt. 1, Aurora CO
- 1-3 Sep: CAIG Reviews & Gov't ICE Team Mtg, NGST, Redondo Beach CA
- 6 Sep: Labor Day Holiday (Gov't & SSPR)
- 8-9 Sep: NPOESS Customer Forum (NCF), NGST, Space Park, Redondo Beach CA (NOTE: IPO only on 8 Sep)
- 13-14 Sep: NPOESS Monthly PMR, NGST, Space Park, Redondo Beach CA
- 15-17 Sep: Bi-lateral METOP-NPOESS Coordination Mtg, France
- 20-24 Sep: 2004 International Geoscience & Remote Sensing Symposium (IGARSS), Anchorage AK
- 5-6 Oct: C3S F2F Mtg, Raytheon, Aurora CO
- 12 Oct: Columbus Day - US Gov't Holiday
- 19-21 Oct: Polar Max 2004, Environmental Monitoring User Forum, NGST, Redondo Beach CA



From the Program Director -- Jim Goodrich, VP & Dep. PD (continued from page 1)

mission improvements over the current POES and DMSP operational systems. However, these improvements come with increased technical development risk. We are fortunate that the IPO acquisition strategy started the NPP sensor development years before NPOESS award. That early sensor development has provided additional time to work through the problems. Every day our payload team is working through development issues and continuously moving forward. We are currently testing EDU and flight hardware as well as building the first flight units. This is the exciting time in a program when paper turns to hardware and software that will be flying in two years!

•NPOESS has been fortunate that we have not encountered the large (orders of magnitude) cost growth that the last few new space programs have had to confront. Those programs are facing significant Congressional, government, and customer oversight and insight as well as negative national press articles. The pressure on those programs to perform is intense and something we do not want. We have not suffered a similar fate because the IPO and contractor team has executed the program with minimal impacts. This is outstanding program performance and kudos to the entire team.

•I want to, not only offer my thanks, but also John Cunningham, Steve Simone, Fred Ricker and Mike Mader's thanks, for your dedication and achievements.



NORTHROP GRUMMAN

Space Technology

IPO • Raytheon

Meet the Management – The Systems Integration Team

Brian Chappel, Systems Integration IPT Lead, NGST



- BS Aerospace Engineering, Penn State (yes, I'm a Nittany Lion!), MBA, UCLA
- First nine years of career in USAF as acquisition engineer. Worked first on ICBM reentry systems, followed by assignment as Program Manager for a Smallsat program at Space Division in 1988. Met and worked with Dave Edwards for the first time on that program.
- After the Air Force, worked at Tecolote at LA AFB as a space systems cost analyst, but for only 9 months. During that time, I learned a lot about cost estimating & modeling of space systems as I did a full independent life cycle cost estimate for Milstar.
- TRW then hired me at Space Park to lead the Pricing organization in the Defense Systems Division. In the four years in that job, I worked on a ton of big proposals which was a fantastic crash course in learning about Space Park, its capabilities, and a lot of the great people that make it go. During that time, I also led a major multi-billion dollar sole source proposal effort which would give me great experience for use when NPOESS came along later.
- After the pricing job, I then moved into System Engineering for a couple of years where the highlight was leading a future architecture definition study in one of our major business areas.
- After SE, it was on to something completely different when I became part of an organization called TRW Ventures that was charged with commercializing the various technologies developed at Space Park over the years. In my two years there, I was the deal lead for the purchase of a laser products company and then I led the TRW business development effort to commercialize a laser-based EUV light source for semiconductor lithography. In that role, I had Intel and other semiconductor companies as a customer...talk about different perspectives, those guys move fast!
- While having a grand time in Ventures, I was plucked away to become the NPOESS Capture Manager.
- My first day on NPOESS was 9/10/2001...the day before 9/11. I stayed at SP while everyone else got stuck in Aurora at the ground demo! The proposal effort was an amazing activity and sometimes I still can't believe how much the team put into trying to win. My eventual inclusion in the FPR as Supply Chain Manager was just a lucky event as the person slated to do it left the company just as we got ready to submit the FPR. When we heard we won, it was the single most exciting event in my professional life...it was very satisfying to put all that hard work in and see its value recognized by the customer.
- Most folks know my NPOESS history...first Supply Chain Mgr and now SI IPT lead. Both great positions, but I have to admit I don't miss the winter visits to Ft Wayne!
- On the personal side, I've been married for 20 years (the anniversary is in the middle of this weeks PMR!) and have one son who is a sophomore in high school. For hobbies, I like reading, adding (and subtracting!) from my wine collection, and hanging out with my family doing whatever!

Dave Edwards, Systems Integration IPT Lead, IPO-Aerospace



- PhD and MS in Physics, The American University; BS in Physics, Lafayette College.
- Research Physicist for the Naval Surface Weapons Center, Silver Spring, MD, 1966 – 1977.
- Has been with The Aerospace Corporation since 1977 in a number of positions and projects/programs:
 - [Bureau of] Alcohol, Tobacco, and Firearms Explosive Tagging Program - Project Engineer responsible for developing techniques to insure survival of taggants in terrorist bombing scenarios, Washington, DC;
 - Satellite Cryogenic Development - Lead Project Engineer for Air Force/Strategic Defense Initiative Office (SDIO) satellite cryogenic cooler programs [in support of space IR systems], Albuquerque, NM;
 - Neutral Particle Beam Experiment - Lead System Engineer responsible for government oversight of the Neutral Particle Beam Experiment satellite;
 - Technology for Autonomous Operational Survivability (TAOS) Program - Lead System Engineer responsible for government oversight for the integration and test of all individual experiments onto on to payload module and of payload module on to satellite, Albuquerque, NM;
 - High Altitude Balloon Experiment (HABE) - Served as Government Chief Engineer responsible for all technical aspects of program, Albuquerque, NM;
 - Senior Project Engineer: NPOESS government lead on the System Integration [SI] Integrated product Team (IPT) with the system contractor NGST; responsible for system architecture; risk management/trades; Cost As an Independent Variable [CAIV] trades; all external Interface Control Documents (ICDs), and cross-IPT integration issues of the data processing subsystem, C3 subsystem, and spacecraft. Participated in all the IPO source selections either an advisor, evaluator, or subcontract chief. Other responsibilities include: [1] obtaining and managing Aerospace engineering matrix support, as needed, for the satellite and sensor portions of NPOESS; and [2] official member of all NPOESS Source Selection Evaluation Boards.
- Has a patent to his name and a number of publications to his credit.
- Married 37 years -- Wife's name is Elma; with two sons:
 - David, 32, attending Duke Medical School [when not traveling to some foreign country]
 - Jeff, 29, is doing his residency in pediatrics at Boston's Children's Hospital
- Golfing fanatic.
- Other hobbies: genealogy and Biblical scholarship [second paper soon to be published].



Team Members' Accomplishments

- **Curtis Stutz**, IPO Program Manager for the Space-Based Spectroscopic Sensor, pinned on the rank of Captain, United States Air Force, on Friday July 9th.
- **J.R. Parsons**, IPO Program Test & Evaluation Engineer and Deputy ST&E IPT Lead, pinned on the rank of Captain, United States Air Force, on Friday July 9th.



John Cunningham (center) w/ new Captains, Parsons & Stutz

New Baby Announcements! Congratulations Moms & Dads!

Stuhlsaltz: Kelly, a Raytheon-Aurora C3S Software Engineer, and his wife had a baby girl, Ashley Marie, on June 26, 7:50am CDT. Vital Statistics: Weight - 9lbs; and Length - 21 Inches. Both Mom and Baby are doing great!



Ashley Marie Stuhlsaltz

Van Der Vaart: Amy, a Raytheon-Aurora C3S Software Engineer, and her husband had a baby boy, Nicholas James, on July 28, 8:09 pm CDT; Vital Statistics: Weight: 8 lbs 4 1/2 oz; and Length: 20 1/2 Inches. Baby & Momma are both doing well!

- Greg Shields, Raytheon-Aurora NPOESS IT Support, published an article in **Microsoft Certified Professional Magazine**, July 2004, entitled "Gaining Control Through Enterprise Process." The article can be accessed via the following web site: <http://www.mcpmag.com/features/article.asp?EditorialID=421>

NPOESS IS Team Awarded the 2003 Raytheon IIS IT Outstanding Team Award

- On June 30, 2004 at an IIS-wide ceremony the NPOESS IS Team was awarded the **2003 IIS IT Outstanding Team Award**.
- During 2003 and the start up of the National Polar-orbiting Operational Environment Satellite System (NPOESS) program, the NPOESS IT/IS Team ensured a smooth ramp up and received numerous compliments from the customer, prime contractor and local management. "The IT support on NPOESS has been exceptional. The NPOESS IT/IS Team has demonstrated outstanding initiative, dedication and talent and were key technical contributors to many aspects of this program's success.". The members of this outstanding team are Gary Andria, Mark Chisholm, Colin Connor, Andrew Gonzales, Brian Hull, James Lanyon, Stacey Messenger, Dave Michaels, Greg Shields, Mark Whatley, Jason Wolitzky, and Mike Worden.
- Also presented at this time was the **2003 IIS IT Aurora Quiet Achiever Award**. This was presented to Greg Shields (NPOESS IT) Greg's contributions to the NPOESS program have been numerous. One of the most important was when a



The team after receiving their award:

- Back row (left to right): Greg Shields, Mike Worden, Gary Andria, Colin Connor
- Front row (left to right): Jason Wolitzky, Mark Whatley, Stacey Messenger, Andrew Gonzales, Brian Hull

virus struck the Raytheon Corporate site/e-mail system and NPOESS experienced virtually no problems. It was because Greg, prior to going on scheduled PTO, made sure all the patches and updates to the virus software had been installed. The while he was on PTO he called in to ensure that all was going well and they were not experiencing any problems. Greg is always available to help and he does so with a very positive attitude that makes him very enjoyable to work with.

• Mike Mader, Raytheon VP & Asst. NPOESS Program Director, sent his congratulations to Stacey Messenger's team and thanked them for everything that they do for NPOESS. "I agree you guys are the best - keep up the great work," Mader stated. Mader also said: "NPOESS Team - take a moment to congratulate and thank a member of the IT/IS team. They are playing a key role in our success with NPOESS."

Team Members' Accomplishments – Continued from p. 3

Raytheon IIS Achieves Important Milestone: CMMI Level 3 - Aurora and Omaha

*Mike Mader, Raytheon VP & Asst. NPOESS Program Director, recently sent the following message out to the Raytheon-Aurora NPOESS Team: "Congratulations to all of you and many thanks for the extra effort that made this possible. We promised in our proposal that we would continue our process improvement and pursue CMMI Level 3. We have obviously lived up to that commitment. Considering that two thirds of the evaluation was based on the NPOESS program should make you feel even that much better about this accomplishment. While having the CMMI Level 3 certificate on the wall is something to be proud of, the most important thing to me is that our processes and the way we do business has been endorsed by an independent assessment. Read Mr. Keebaugh's message carefully - all CMMI assessments are not created equally. We took on the most aggressive assessment because we truly want to know how well we are doing to meet all the program objectives. As the lead assessor stated this afternoon, it is time to celebrate our success before we look into the details of the assessment and decide where we go from here. I will let you know that I am not one to live on past accomplishments. I will strongly encourage Ray Kolibaba to continue toward further process improvement and eventual CMMI Level 5. Once again thanks to all of you and congratulations on a major accomplishment."

•Mike Keebaugh, President of Raytheon Information & Intelligence Systems (IIS) sent this message: “Congratulations to the Intelligence and Information Systems team in Aurora and Omaha for attaining the Software Engineering Institute’s Capability Maturity Model Integration Level 3 rating for Systems Engineering, Software Engineering, and Integrated Product and Process Development.

An independent appraisal led by the Center for Systems Management, an SEI-certified Lead Appraiser, confirmed a CMMI® Level 3 rating for the Aurora and Omaha sites. This accomplishment was the result of 18 months of hard work by dedicated people, and I appreciate your efforts.

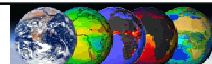
The Aurora/Omaha team is the first in Raytheon to receive the Integrated Product and Process Development designation as part of this certification. At the end of 2003, only a dozen organizations worldwide had obtained this difficult-to-achieve designation. IPPD takes process improvement beyond technical and program management disciplines and encompasses all functions that participate in the program life cycle.

This Level 3 rating is critical to IIS because it demonstrates to our partners, customers and potential customers that we are serious about process improvement. It proves we manage our processes and that customers can depend on us for the most effective solutions through knowledge sharing, repeatability and consistency.

This latest achievement follows a long history of process improvement in Aurora and Omaha starting with the adoption of SEI's Software Capability Maturity Model in the early 1990s.

I look forward to seeing all our operations reach their CMMI objectives and milestones in the coming months, as it tells our customers that they face fewer development risks, lower costs and get the best solutions when they choose IIS.”

Science Spotlight — Your Science Advisory Team (SAT) at Work



Neil Baker, Bob Murphy and John Cunningham
sit in on the proceedings



(Photos from April 27-28, 2004 Meeting at the IPO)

NPOESS SAT Members:

Seated at the table from left to right are Mike Musetto, Tom Von de Harr, Mark Abbott, Bob Murphy, Jim Duda, and Barrien Moore. Standing are Bob McLatchey, Ben James, Susan Ustin (directly behind Susan is Andy Christiansen), then Joe Friday (behind him is Scot Turek), then Phil Ardanuy, Stan Schneider, and Steve Manao.



IPT Intel: – SE and ST&E Merge in Program Reorganization

Objective

- Change organization structure to merge SE and ST&E into a single Level 2 IPT

Motivating Factors

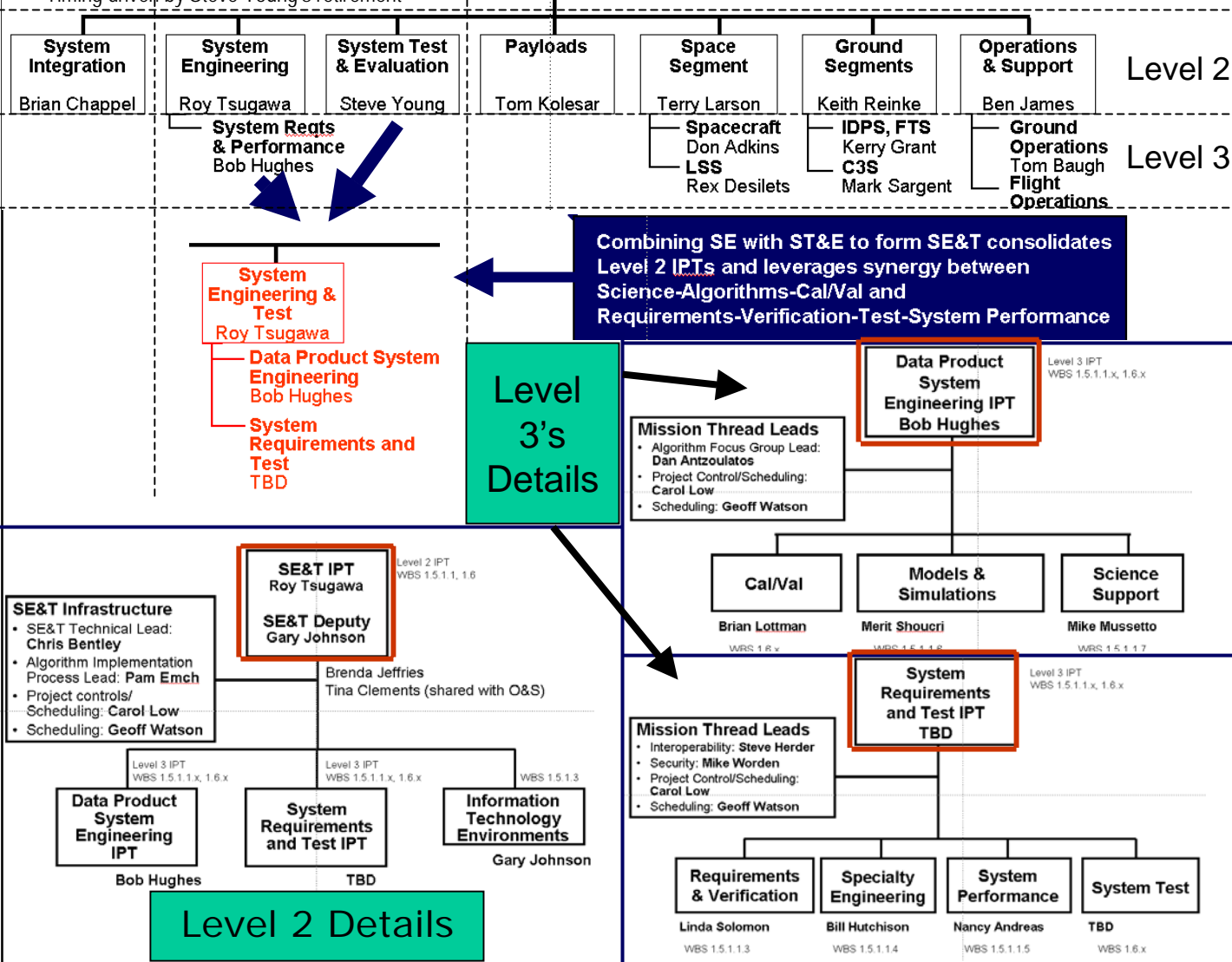
- Closer coupling of System Test and System Requirements and Verification activities
- Exploit data product synergy between Cal/Val and algorithm development, verification and science activities
- Reduces the number of Level 2 IPTs
- End System Performance ownership, especially for the NPOESS data products, strengthened by having responsibility collocated in one organization
- Timing driven by Steve Young's retirement

Reorganization Overview

- Combine SE and ST&E into a single SE&T IPT at Level 2
- Assign SE&T leadership to Roy Tsugawa
- Move entire ST&E team and WBS responsibility to new IPT
- Two new Level 3 IPTs created, Data Product System Engineering led by Bob Hughes, and System Requirements and Test to be led by TBD (job requisition being posted within NGST)

Timeline

- Takes effect 7/1/04



Six Sigma: By Jeffrey L Johnson, Raytheon NPOESS Lead Six Sigma Expert

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C3S IPT Holds Visionary Team Planning (VTP) Offsite



C3S IPT Visionary Team Members

- The Command, Control & Communications (C3S) IPT conducted a successful Visionary Team Planning (VTP) offsite. This session was held to pro-actively address key challenges faced by the IPT in the coming year as C3S heads toward Qualification, Segment Integration and Factory Acceptance Test (FAT).

- Visionary Team Planning (VTP) is a mature and effective process used in Raytheon Six Sigma for creative visioning and planning. It involves key leaders and stakeholders in a structured but highly creative, high energy, paradigm-breaking event. Teams generate actionable plans tied to clearly defined visions and measurable goals using a variety of activities and tools. Participants leave with task owners and the team aligned and committed to each prioritized action.

- Participants in this event included the senior C3S leads from Raytheon, the IPO, Northrop Grumman, and CSC. NPOESS R6Sigma Experts Amy Faust and Jeff Johnson facilitated the event with Expert Leanne Wheeler assisting from another business area.

- The group addressed five key areas: (1) Meeting Cost Challenges, (2) Working ECPs with the IPO, (3) Meeting the Challenge of Qualification, Integration and FAT, (4) Maximizing Test Effectiveness, (5) IPT Morale.

- Each participant focused on one of the above areas, but fully participated in each of the other areas through an organized series of activities. The end result included statements of both current state and vision for each of the key areas, as well as a set of clear, prioritized actions and projects to achieve the vision.



R6Sigma Advancements

- NPOESS R6Sigma Lead Expert Ellen Chilikas has advanced to Raytheon Space Systems Expert working Aurora Campus-wide issues and thus will no longer directly support NPOESS.

- Jeff Johnson has stepped up to serve as the Lead NPOESS R6Sigma Expert

- Amy Faust received her R6Sigma Expert Certification on April 21st.

Congratulations Ellen, Jeff and Amy!!!

- R6Sigma Expert certification is a significant development milestone. Experts are recommended for certification when their business leaders, Mentoring Expert and Master Expert believe the candidate has learned and demonstrated the wide range of competencies expected of a Certified Expert, and that the candidate can "independently and confidently" lead change anywhere within the company.

- The certification board itself is comprised of a group of senior business leaders, Master Experts and Senior Experts from across Raytheon who evaluate the proficiencies demonstrated by the candidate. Each candidate is given 31 minutes to share their expert journey with the board, highlighting the projects and events that illustrate the candidate's ability to independently and confidently lead change. Those who are successful become Certified Raytheon Six Sigma Experts.



Amy Faust & Jeff Johnson

R6Sigma Specialist Qualifications

Congratulations to all NPOESS Raytheon 6Sigma Specialists Qualified during 1st Quarter 2004!!!

Bronze Pin (completed 1st full cycle R6Sigma project)		Silver Pin (completed second project)	
Andrew Gonzales	Sid Little	Mark Bray	Mike Gilmore
Ginger Logan	Douglas Nieland	Alicia Penney	Gary Route
Celest Olman	Brad Reichenbach	Vince Ruland	Joy Swearingen
Paul Reinhardt	Jeff Schreiber	Paul Tynan	Wayne Wesler
Paul Tynan	Mark Watley	Gold Pin (completed third project)	
		Stacey Messenger	Greg Shiels



Six Sigma: By Jeffrey L Johnson, (Continued from p. 5)

1st Raytheon 6Sigma Quarterly Award

The first Quarterly Award for "R6Sigma Activity of the Quarter" was presented at the May Raytheon NPOESS all-hands. This award will now be given each quarter along with the previously established categories of Management, Technical and Support Employees of the quarter. As with the other established categories, those selected for a quarterly award will become the pool from which an annual award will be selected. The actual award conferred upon the recipients is also commensurate with the previously established award categories.

Types of Efforts Considered for Award:

Any significant R6Sigma project or activity that occurred in the quarter can be considered for nomination. An activity can be a business diagnostic, significant Customer engagement, specialist project, etc. (the key distinction is this award is not limited solely to projects, but can be extended to any significant R6Sigma activity or use of value-added R6Sigma tools).

Criteria:

Activities are considered for award based on the following attributes:

- Customer: Addressing Customer concerns and /or involving Customers
- Helping achieve our R6S financial goals: Addressing program risks/opportunities or profit (continued next column...).

- Tools: Innovative use of tools
- Suppliers: Anything to do with involving suppliers in R6S activities
- Process improvement: Improve core processes and products
- Change agency: Helping to promote a R6S culture
- Applicability / migration to areas outside of NPOESS

... and the recipient of the 1st Qtr 2004 "R6Sigma Activity of the Quarter" is:

Omaha Staffing Concerns Team

- Team Members: Kerry Grant, Gina Gradishar, Curt Davis, Dan Cornell, Dave Sundberg.

•Summary:

Vision Statement: Insure that a stable, efficient, and fully trained staff is productively employed while functioning/operating in a volatile environment.

Customer: Robert McKnight (NGST) participated in the Diagnostic.

Tools: Activity was facilitated as a Business Diagnostic. Instead of capturing UDEs, the Team listed the positive attributes of the Omaha team.

Risk/Opportunity Goal: Assisted in the mitigation of the cost/schedule risk associated with the late algorithm deliveries.

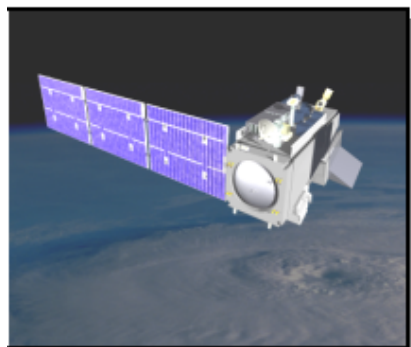
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CONTRACT PERFORMANCE

WBS	LVL	DESCRIPTION	Mar 04 CpiCum	Apr 04 CpiCum	May 04 CpiCum	Mar 04 SpiCum	Apr 04 SpiCum	May 04 SpiCum
121	3	Sat Assembly & Test	0.89	1.03	1.03	1.02	0.91	0.92
122	3	Spacecraft (SC)	0.96	0.86	0.86	0.90	0.93	0.93
123	3	Payload (P/L)	0.87	0.93	0.92	0.93	0.86	0.86
124	3	SS Engineering & Mgt	0.84	0.89	0.90	0.87	0.86	0.85
131	3	C3S Management	1.04	1.00	1.00	1.00	1.04	1.03
132	3	C3S Engineering I&T	0.92	0.99	0.99	0.99	0.92	0.95
133	3	Mission Mgt Cntr (MMC)	0.97	0.97	0.98	0.97	0.97	0.97
134	3	Backup MMC (BMMC)	0.00	1.00	0.00	1.00	0.00	0.00
135	3	C3S Ground Station	1.01	1.00	0.99	0.93	1.02	1.02
136	3	DataRouting&Ret (DRR)	0.97	0.97	0.96	0.98	0.97	0.96
137	3	Satellite Flt Veh Sim (FVS)	0.65	0.79	0.84	0.76	0.71	0.73
141	3	IDPS Management	1.02	1.00	1.00	1.00	1.02	1.02
142	3	IDPS Engineering I&T	1.01	0.99	1.00	0.98	1.01	1.01
143	3	IDPS S/W Development	0.97	0.97	0.99	0.97	0.98	1.01
144	3	Centrals	1.08	0.60	0.71	0.52	1.51	2.50
151	3	System Eng & Integr Team	1.00	0.98	0.98	0.98	1.00	0.99
152	3	Program Management	1.00	1.00	1.00	1.00	1.01	1.02
161	3	ST&E Management	1.01	1.00	1.00	1.00	1.03	1.02
162	3	Devel Test & Eval (T&E)	1.01	0.99	0.99	1.00	1.00	1.01
163	3	Operational T&E	1.28	1.00	1.00	1.00	1.29	1.28
171	3	C3S Training Development	1.18	0.92	0.92	0.91	1.24	1.25
172	3	IDPS Training Development	1.13	0.99	0.97	0.98	1.13	1.12
173	3	FTS S/W I/F Training	0.00	0.00	0.00	0.00	0.00	0.00
174	3	Training Infrastructure	1.09	1.00	1.00	1.00	1.14	1.19
175	3	SS Training Development	1.72	1.00	1.00	1.00	1.72	1.72
182	3	SS PSE	1.22	1.00	1.00	1.00	1.31	1.39
1A1	3	MU Integration	1.31	1.03	1.02	1.02	1.43	1.48
1A2	3	Mate, Checkout & Launch	0.00	0.00	0.00	0.00	0.00	0.00
1A3	3	On-Orbit Support	0.00	0.00	0.00	0.00	0.00	0.00
1F1	3	O&S Management	0.99	1.00	0.99	1.00	0.98	0.97
1F2	3	Operations	1.00	0.77	1.04	0.76	1.00	1.00
1F3	3	Sustaining Eng Support	0.00	0.00	0.00	0.00	0.00	0.00
1H1	3	FTS Management & Eng	1.04	1.00	1.00	1.00	1.03	1.03
1H2	3	FTS IDPS Software (S/W)	1.08	1.00	1.00	1.00	1.08	1.08
1H3	3	FTS H/W Specifications	1.95	1.03	1.01	1.00	2.04	1.94
1H4	3	FTS IT Field Support	0.00	0.00	0.00	0.00	0.00	0.00
		Grand Total	0.92	0.95	0.95	0.95	0.92	0.91

NPOESS Facts: NPOESS Preparatory Project (NPP)

npoess.noaa.gov



Mission Objectives

To provide IPO with pre-operational risk-reduction demonstration and validation for three of the critical NPOESS instruments, algorithms, and ground processing VIIRS, CrIS, OMPS and ATMS. Provide NASA with continuation of global change parameters after Earth Observing System (EOS) Terra and Aqua

- Atmospheric temperature and humidity sounding
- Sea surface temperature
- Land and ocean biological productivity
- Cloud and aerosol properties

Mission Characteristics

Instruments:

- Visible Infrared Imaging Radiometer Suite (VIIRS)
- Cross-track Infrared Sounder (CrIS)
- Advanced Technology Microwave Sounder (ATMS)
- Ozone Mapping and Profiler Suite (OMPS)

Launch: 2006

Orbit: 824 km polar sun-synch, 10:30 am descending node

Launch Site: Western Test Range

Mission Duration: 5 year/7.5 year consumables

NPP Contributions to NPOESS

Instrument Risk Reduction - Early delivery/instrument level test/system-level integration and test Provides lessons learned and allows for any required modifications in time to support NPOESS first launch readiness

Ground System Risk Reduction

- Early delivery and test of a subset of NPOESS-like ground system elements

Early User Evaluation of NPOESS Data Products

- Provides algorithms/instrument verification and opportunities for instrument calibration/validation
- Allows for algorithm modification prior to NPOESS first launch

Responsibility Sharing*

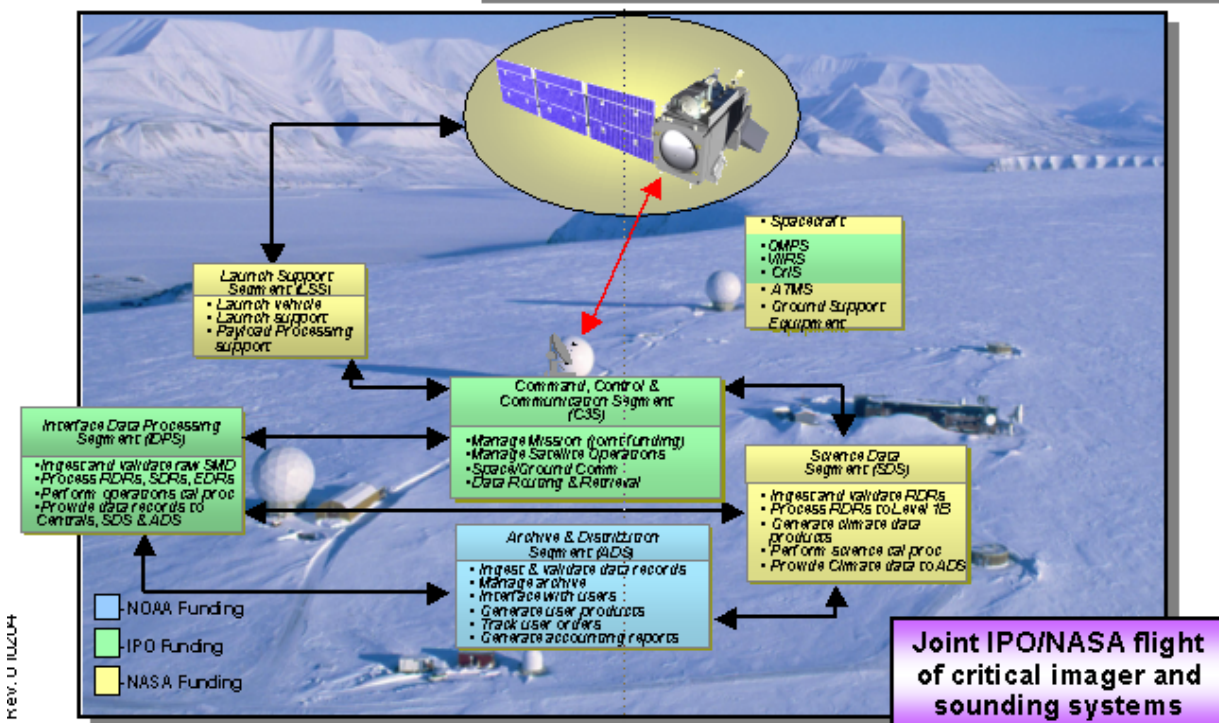
IPO

Joint Program Management
VIIRS Instrument
CrIS Instrument
OMPS Instrument
Command, Communications, Control Segment (C3S)
Interface Data Processing Segment (IDPS)
Mission Operations

NASA

Joint Program Management
Mission systems engineering, integration, & test
ATMS Instrument
Spacecraft and Integration
Launch vehicle and associated activities
Science Data Segment (SDS)

Note: NOAA/NCDC is supporting formulation of Archive and Distribution Segment (ADS)
* As documented in NASA/NOAA DoD Initial Implementation Agreement, November 27, 1999

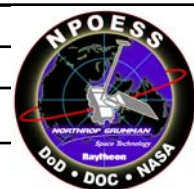




People on the Move

***Status:** With respect to NPOESS Program, Arriving/Arrived (A); Departing/Departed (D); Changing/Changed Jobs (C) (within program).

Status*	Name	Org-Location	From	To	Notes
D	Dana Smerchek	Raytheon-Aurora	C3S MMC Element Lead	Other Raytheon Program	
C	Wayne Gathman	NGMS-Aurora	Sr System Engr - Conops	IDPS Subcontracts Mngt	
A	Karen McCracken	Raytheon-Aurora	Another non-aerospace company	C3S DRR SE Lead	
D	Rafael Beltran del Rio	Raytheon-Aurora	C3S DRR SE Lead	Another program (IMM) for Raytheon Aurora	
C	Paul Manoogian	Raytheon-Aurora	Raytheon NPOESS Operations Manager	Special Assignment	Retiring Sep 2004
A	Paul Koster	Raytheon-Aurora	PM for development & flight ops EMOS for NASA's EOS Terra, Aqua and Aura missions.	Raytheon NPOESS Operations Manager	
D	Sid Skornia	Raytheon-Aurora	Ground O&S ILS Lead	Other Raytheon Program	
A	Andrew Hamilton	Raytheon-Aurora		IDPS Segment Architecture	
C	Lt Col Keith Gilmore	IPO – USAF	Director, Program Control	Tecolote Technical Mngr	Retiring from USAF
D	Steve Young	NGST-Space Park	System Test & Eval IPT Lead	Retirement	
D	Vern Patterson	Raytheon-Colo Sprngs	PM SESS & S/W Engineering	Retirement	
A	Dave Fuino	Raytheon-Colo Sprngs		PM SESS & S/W Engineering	
D	Capt Victor Hubenko	IPO – USAF	Deputy C3S Manager	Graduate School	
A	Mike Nelson	Raytheon-Aurora	Other Raytheon Program	Ground O&S ILS Lead	
D	1LT Steve Mink	IPO – USAF	IPO Dep. Payloads IPT Lead	Graduate School	
D	Ellen Chilikas	Raytheon-Aurora	Lead NPOESS R6Sigma Expert	Raytheon Space Systems Expert	
C	Jeff Johnson	Raytheon-Aurora		Lead NPOESS R6Sigma Expert	
C	Amy Faust	Raytheon-Aurora		R6Sigma Expert	
A	Jim Gleason	NASA -- GSFC		NPP Project Scientist	
A	Jim Buttler	NASA -- GSFC		NPP Dep Project Scientist	
A	Glenn Iona	NASA -- GSFC		NPP Mission Engineer	
A	Andy Carson	NASA -- HQ		NPP Project Exec.	
C	Vince Grano	IPO – NOAA	APS/ERBS/TSIS Manager	Program Control	Temporary
D	Don Schnaidt	Raytheon – Aurora	C3S DRR Element Lead	Other Raytheon Program	
A	Osman Dadabhoy	NGST–Space Park		Payload Quality Lead	
A	Bob Badger	Raytheon – Aurora	Other Raytheon Program	GO&S Deputy IPT Lead	Also GO&S Activation and Transition Lead
C	Mike Norton	Raytheon - Indianapolis	IOT Program Manager ¹	ILS Lead for GO&S	¹ Keeps IOT Job
D	Maj Nick Demidovich	IPO – USAF	Payload Manager	Civilian Job...	Retiring from USAF



Last Broadcast August 15th

NPOESS:
Sentinels Against the Storm



The Weather Channel's Forecast Earth program broadcast, *Sentinels Against the Storm* Sunday, on August 15 at 8pm (PT)/11pm (EST) was the last scheduled. This 30-minute program featuring NPOESS touches on POES, GOES and DMSP. If you missed these broadcasts and would like to review this well-done video, you can obtain a CD version by contacting: Greg.Talley@noaa.gov.



External Affairs Highlights Steve Goralczyk, EA Admin Team Lead



The NPOESS External Affairs Team has had a very exciting 2004 so far and is looking forward to a number of very high profile conferences and Exhibits in the next few months. One of the most notable accomplishments has been the development and fielding of a seamless joint exhibit process – joining the Industry Partners with our IPO counterparts into a single integrated exhibit at the most important shows each year. But External Affairs is far more than just exhibits and papers at Conferences, and we are looking much farther into the future than just this calendar year.

The NPOESS External Affairs Team is entrusted with promoting the program, raising awareness and support among Users and Stakeholders, and working to maintain stable funding. This responsibility requires us to follow budget processes that span 3+ fiscal years and track external programmatic and political influences that can be many years in the making. NPOESS has encountered a number of challenges since the program was awarded in 2002 and we have often used the strength of the team to orchestrate responses. We have always relied heavily on our industry partners and are anticipating opportunities to do more in the coming years. An offsite was held with the Instrument Subcontractors last year to introduce the Program External Affairs process and lay out an initial plan for 2004 for joint investments to support promotional events. That effort resulted in more companies contributing manpower and financial support to our promotions and outreach efforts. With those funds, materials, and personnel, we have sponsored Team NPOESS receptions and events at the American Meteorological Society (AMS) Annual meeting in Seattle last January and the AMS 50th Anniversary of Numerical Weather Prediction Symposium at College Park, MD in June. IPO, NGST and Raytheon NPOESS Team members also participated in the June 21-25 India-US Space Science Conference in Bangalore India with corporate exhibit booths, a poster session, and several meetings. We also plan similarly sponsored events at the IEEE International Geoscience & Remote Sensing Symposium (IGARSS) in Anchorage AK in September and Polar Max environmental monitoring forum in LA in October (see more info on p. 12). We have also begun integrating developmental Sensor scale models in the larger booths we send to priority exhibits and shows. We are encouraging our partners to not only promote NPOESS in their own corporate booths but also participate with our integrated TEAM NPOESS (IPO/NGST/Raytheon) hosts at the joint booth to the extent they can. Some of our sensor partners have already begun sending knowledgeable staff to participate in the Joint exhibit – we are looking for ways to energize more joint involvement. Looking ahead to next year, we are already laying in plans and making Conference commitments. The External Affairs team, in coordination with Program Management, is discussing a series of meetings to communicate our plans and needs well in advance of most companies annual resource budgeting schedules.. The first meeting would target the partner and sensor Program Manager level, intended to highlight the value of Team investments over the past year, planned efforts for the coming year, the need for each company to designate a lead External Affairs representative, and an outline of top level budgetary needs for next year. The objective will be to clearly show how resources were spent, the value to the program and the level of recognition conveyed to contributing partners. The second meeting is expected to involve the designated External Affairs representatives from each company to discuss more specific events, activities, and resource planning. The objective there will be to pool creative energy, lay out specific and TBD promotional items and activities, and determine specific mechanisms for contributions by partners. We've enjoyed a very productive and rewarding 2004 so far. Your External Affairs IPT leads have learned a lot about how different Government Agencies and our broad array of companies do various aspects of External Affairs differently. This diversity of perspective and process is helping us evolve into a very capable and creative partnership. We welcome your comments, look forward to your participation (in our many sub-IPTs) and appreciate your patience as we try new and at times yet to be proven ideas. Everyone has the ability to help promote and protect the future well-being of NPOESS in some way – it's our job to help you do yours.

AMS 50th Anniversary of Numerical Weather Prediction Symposium, Univ. of MD, College Park June 15-17, 2004



Cunningham Briefs NPOESS



IPO reps Greg Talley and Craig Nelson commandeer the NPOESS exhibit booth



Jack Kelly, DOC Dep Undersecretary for Oceans & Atmosphere (left), addresses India-US Space Science Conference Plenary in Bangalore India on June 21, 2004



NPP/NASA News — Pete Wilczynski, IPO NPP Project Manager New Official NPP Decal Approved



Die Cut Image Area
(Do Not Print)

THE NPOESS PREPARATORY PROJECT (NPP) IS A JOINT MISSION BETWEEN NASA AND THE NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM (NPOESS) INTEGRATED PROGRAM OFFICE (IPO). NPOESS IS THE U.S. GOVERNMENT'S FUTURE LOW-EARTH ORBITING WEATHER AND ENVIRONMENTAL SATELLITE SYSTEM, WHICH WILL COMBINE MISSIONS CURRENTLY PERFORMED SEPARATELY BY THREE AGENCIES (NASA, DoD, AND NOAA) AND RESULT IN CONSIDERABLE SAVINGS TO THE AMERICAN TAXPAYER. NPP PROVIDES A "BRIDGE" BETWEEN CURRENT AND FUTURE SYSTEMS BY PROVIDING PRE-OPERATIONAL ON-ORBIT TEST AND RISK REDUCTION FOR KEY NPOESS INSTRUMENTS AND GROUND-BASED DATA PROCESSING CAPABILITIES, WHILE MAINTAINING CONTINUITY OF ENVIRONMENTAL DATA USED FOR LONG-TERM CLIMATE CHANGE RESEARCH.

THE FOUR NPP INSTRUMENTS ARE: THE VISIBLE INFRARED IMAGING RADIOMETER SUITE (MIRS), WHICH WILL PROVIDE GLOBAL OBSERVATIONS OF LAND, OCEAN, AND ATMOSPHERIC PARAMETERS; THE ADVANCED TECHNOLOGY MICROWAVE SOUNDER (ATMS) AND THE CROSS-TRACK INFRARED SOUNDER (CRIS), WHICH WILL COMBINE INFRARED AND MICROWAVE MEASUREMENTS TO MEASURE ATMOSPHERIC TEMPERATURE, MOISTURE, AND PRESSURE PROFILES; AND THE OZONE MAPPER/PROFILER SUITE (OMPS), WHICH WILL MONITOR GLOBAL OZONE LEVELS.

THE MISSION IS JOINTLY MANAGED BY NASA AT THE GODDARD SPACE FLIGHT CENTER, GREENBELT, MD AND THE NPOESS IPO IN SILVER SPRING, MD.

FOR MORE INFORMATION, PLEASE VISIT OUR WEBSITE AT:
[HTTP://JOINTMISSION.GSFC.NASA.GOV/](http://JOINTMISSION.GSFC.NASA.GOV/)



First NPP Spacecraft Assembly Photos from Ball Factory

Photos supplied by:
Don Hood
NPP Program Manager
Ball Aerospace & Technologies Corp.



NPP Spacecraft on three-axis positioner (TAP)

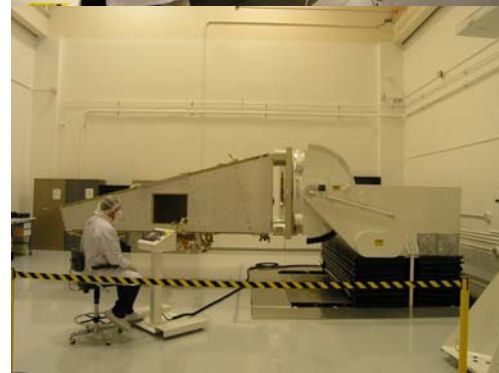
Here are pictures of the spacecraft moved to the TAP.

All flight harnesses installed, waiting for the PUMA, DSEP and CTU electronics boxes.

(PUMA: power utilization management assembly;

DSEP: distribution & support electronics package;

CTU: command & telemetry unit)





October 19-21, 2004

**Location: Northrop Grumman Space Technology Presentation Center,
Redondo Beach, CA**

Save the dates in your calendar and bookmark the POLAR MAX '04 website on your computer and prepare to renew your spirit for environmental monitoring, as together we maximize information sharing within the Polar Environmental Satellite community.

MAXimum

participation by the community

information for users

focus on relevant issues

interaction between users and providers

<http://home.earthlink.net/~spiritkat/index.htm>

Hosted by:



Coordinators:



Working Group Report — Mark Hyde, NPOESS C3S Systems Engineer, Raytheon Co. **NSOF Construction on Track**

- The new NOAA Satellite Operations Facility (NSOF) is now under construction. The current schedule has the NSOF ready for NPOESS occupancy September 2005.
- The NSOF replaces the current facility (Federal Building #4 or FB4) used by NOAA/NESDIS to manage its satellite resources and to develop products used by the weather forecasting community, inform ships of ice floe dangers, and conduct search and rescue missions.
- In addition to supporting the NPOESS mission, the NSOF will support the satellite systems for Geostationary Operational Environmental Satellite (GOES), Polar-orbiting Operational Environmental Satellite (POES), DoD Defense Meteorological Satellite Program (DMSP), Search and Rescue (COSPAS – SARSAT), and National / Naval Ice Center (NIC).
- The NSOF is a 190,000 square foot, five level building. A portion of the building is underground. The roof of the main structure is landscaped grass and trees.
- The NSOF will have underground parking, a cafeteria, a gym and other services for all who use the facility. Additionally there will be a memorial commemorating NOAA/NESDIS employees.
- The first two levels, approximately 120, 000 square feet, are enclosed within the entire building area. The first level, called the Mat, will provide office space for NPOESS personnel and NOAA/NESDIS staff. The second level will provide building services and conference rooms.
- The tower, located along one side of the building, houses the 3rd, 4th and 5th levels. The third level will contain the NPOESS equipment for both mission management and data processing. Also on the third level, will be the Data Quality Engineer and the IDP Operator.
- The fourth level will support the operational positions for the Mission Management Center (MMC). This level is shared with the other Satellite Operational Control Center (SOCC). On the fourth level is also the Launch Control Room (LCR). This room is shared by all missions for launch activities. The LCR can be configured to support multiple satellites concurrently.
- The fifth level is available for special visitors to observe the launch and operational activities.



Architectural drawing of completed NSOF.

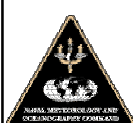
Centrals/Customer Overview Presentations to SSPR Contractors a Hit!

- **Objective:** Provide NPOESS SSPR contractor personnel with insight to Customer's organizations, functions and products.
- **Venue:** A half-day series of briefings by each NPOESS customer agency.
- **Schedule:**

2004 Dates	Host	Location	Audience	Done?
June 8	NGST	Space Park, Redondo Beach CA	NGST, Raytheon SBRS,	Yes
July 13	Raytheon	Aurora Campus, Aurora CO	Raytheon, Ball, NGCS	Yes
August 11	IPO	IPO-ECO 8 th Fl CR, Silver Spring MD	IPO, NOAA/NESDIS, Raytheon-Landover	Yes

Agenda from August 11 Presentations		
Time	Agency	Briefer
10:00	Introduction	Mr. Carl Hoffman
10:15	NESDIS	Mr. Gene Legg
10:45	AFWA	Mr. Tom Coe
11:15	NAVO	Mr. Bob Coulter (telecon)
11:45	FNMOC	Mr. James Vermeulen
12:15	Lunch Break	
12:45	CLASS / LTA	Mr. Bob Rank
1:15	6 SOPS	Invited - Lt Col Mark Hustedt
1:45	Natl Weather Service	Mr. Greg Mandt or Kevin Schrab
2:15	Questions & Answers	

- **Reference:** [my eRooms](#) > [Program Office](#) > [General IPT Info](#) > [Central's Briefs to Contractors](#)



NOAA Satellite and Information Services
National Environmental Satellite, Data, and Information Service

NPOESS Customer Mission Presentations

By Jennifer L. Wever, Raytheon Aurora Communications

• Aurora, Colo. –The NPOESS program decided to test the theory: To get what you want, all you have to do is ask, but with a twist. The program invited end users of their product on site and presented the opportunity for the Raytheon engineers do the asking. This exchange of information was beneficial to both Raytheon and our customers.

• Representatives from the NOAA National Weather Service, the Air Force Weather Agency, the Navy Fleet Numerical Meteorology and Oceanography Center, the Naval Oceanographic Office and the National Environmental Satellite Data and Information Service were recently in Aurora, Colo., to present information about their missions, and the importance of NPOESS to that mission, to engineers and software designers on the program.

• "It was an opportunity for our customers, our end users, to tell us what they do and why NPOESS is important in meeting their data needs in their missions," said Scott Turek, Ph.D., and NPOESS Chief Engineer. "The engineers and computer scientists can better understand how the data are used and now have a better understanding of the National importance of the system."

• Mike Mader, NPOESS program director, agrees. "Basic understanding of how the data are used can influence the design of a product, making it more tailored to customer needs, which keeps the customers happy."

• NPOESS data increases the timeliness and accuracy of severe weather event forecasts. Advanced microwave imagery-sounding data products will lead to improved prediction of ocean surface wind speed and direction, a major factor in the phenomenon we call weather.

• The knowledge obtained from NPOESS data reduces the potential loss of human life and property resulting from severe weather.

• Support for general aviation, agriculture, and maritime activities aimed at improved early warnings will lessen the devastating effects of floods through disaster planning and response.

• For the Military, NPOESS shifts the tactical and strategic focus from "coping with weather" to anticipating and exploiting atmospheric and space environmental conditions.

• "The forum allowed us to hear and understand the customer needs for the duration of the project," said Mader. "We're going to try to do these throughout the life of the program because they make us better."

• Raytheon, through two subcontracts with Northrop Grumman Space Technology, is developing the NPOESS ground segments -- Command, Control and Communications; Interface Data Processing; and Field Terminals -- and the primary NPOESS/NPP sensor, the Visible/Infrared Imaging Radiometer Suite, and has been selected for the upcoming development contract for the Aerosol Polarimetry Sensor. Raytheon was awarded the VIIRS contract in November 2000 and the Ground Segments contract in August 2002.

• "There are about 1,500 people directly associated with the NPOESS project, but it's hard for the engineers to see the big picture," says Turek. "Now there is an understanding of what NPOESS does for our country. You feel good about your project; your work makes a difference."

• The National Polar-orbiting Operational Environmental Satellite System is a satellite system used to monitor global environmental conditions, and collect and disseminate data related to: weather, atmosphere, oceans, land and near-space environment.

• The One Raytheon NPOESS Team is comprised of IIS (Aurora, Omaha, and Landover), RTSC (Landover, Colorado Springs, and Indianapolis), SAS (Santa Barbara), and NCS (Goleta).



Jim Vermeulen, FNMOC, briefs NPOESS team members at Aurora on July 13th.



NPOESS in the News

Northrop Grumman-built Aura Satellite Launched Successfully



PRESS RELEASE -- Date Released: Friday, July 16, 2004; Source: [Northrop Grumman Corporation](http://www.northropgrumman.com)

REDONDO BEACH, Calif., July 15, 2004 -- NASA's Aura Earth Observing System (EOS) spacecraft, built by Northrop Grumman Corporation (NYSE:NOC) was successfully launched this morning at 3:01:59 a.m. PDT. Aura will provide the most comprehensive space-based measurements of atmospheric gases ever taken, revolutionizing the way scientists study and understand changes in the Earth's climate, air quality and ozone layer.

For more information about Aura, please visit this link on the NASA web site: http://www.nasa.gov/mission_pages/aura/main/index.html.



- The Aura spacecraft lifted off Space Launch Complex 2 at the Western Test Range of Vandenberg Air Force Base, Calif., aboard a Delta II rocket. Spacecraft separation occurred sixty-four minutes after launch at 4:06 a.m. PDT, inserting Aura into a phasing orbit 422 miles (680 kilometers) above the Earth. Over the next several weeks, Aura will be moved to its final orbit of 438 miles (705 kilometers) through a series of boost maneuvers.

- "Aura's successful launch marks the beginning of its six-year journey that will help to answer questions about changes in our life-sustaining atmosphere," said Dana Southwood, Northrop Grumman Aura program manager. "We're proud that our flight-proven spacecraft, designed especially for remote sensing, is enabling this important NASA mission. We're looking forward to watching Aura achieve the same level of success as its sibling spacecraft, Aqua."

- The four, newly developed state-of-the-art instruments aboard Aura will become operational in stages over the next six months, starting with Microwave Limb Sounder and followed by High Resolution Dynamics Limb Sounder, Tropospheric Emission Spectrometer, and the Ozone Monitoring Instrument. Science operations will start approximately three months after launch.

Aura is the second EOS satellite built by Northrop Grumman as part of the Common Spacecraft program, and the third satellite in NASA's first EOS series that includes Terra and Aqua. Northrop Grumman applied the lessons learned building Aqua to achieve quality, cost and productivity improvements on Aura.

- Northrop Grumman has decades of experience building scientific instruments and spacecraft for scientific remote sensing missions. The company is applying its expertise to operational missions as the prime contractor for the National Polar-orbiting Operational Environmental Satellite System.

- Northrop Grumman Space Technology, based in Redondo Beach, Calif., develops a broad range of systems at the leading edge of space, defense and electronics technology. The sector creates products for U.S. military and civilian customers that contribute significantly to the nation's security and leadership in science and technology.

Raytheon

Media Relations News Release

Raytheon Achieves Significant Performance Milestone on the NPOESS Program

AURORA, Colo., July 7 2004/PRNewswire/ -- Raytheon Company has achieved a significant program milestone by successfully capturing data from the WindSat/Coriolis weather satellite, making the company's Command, Control, and Communications Segment's multi-mission network capability one of the first National Polar-orbiting Operational Environmental Satellite System (NPOESS) segments to go operational. The multi-mission capability incorporates a new fiber optic network from Svalbard to Tromso, on the mainland of Norway, to the continental United States. The network sends data to the Coriolis Data Distribution site in Suitland, Md., and the data are used to determine global sea surface wind speed and direction as well as to monitor solar mass ejections from the sun. The network provides the NPOESS program with high-speed data transfer, 155Mbps connectivity, from the Svalbard, Norway, ground station previously-available only through slower, more expensive satellite links, reducing costs for existing programs and providing additional capacity for future missions including the NPOESS Preparatory Project. The ground station is so far north that it can see polar-orbiting satellites on every orbit. This enables it to capture blind orbits not visible from the primary station at Fairbanks, Alaska. "For the mission to start taking operational passes within 45 days of getting the green light is exceptional," said Mike Mader, director of the NPOESS program for Raytheon. "Our team worked closely with the customer to ensure delivery in a reliable and timely manner." The next step for Raytheon's Command, Control, and Communications Segments to integrate NASA missions at Svalbard and provide them with the same high-speed terrestrial data transfer capability used for Coriolis, then to transition operations to a new antenna in the fall. Raytheon is part of the Northrop Grumman Space Technology NPOESS team. Northrop Grumman Space Technology leads the team as the prime contractor and has overall responsibility for the program development effort. Raytheon Company (NYSE: RTN), with 2003 sales of \$18.1 billion, is an industry leader in defense and government electronics, space, information technology, technical services, and business and special mission aircraft. With headquarters in Waltham, Mass., Raytheon employs 78,000 people worldwide. {Contact: Darci Bushey, 303.344.6608. SOURCE: Raytheon Company. Web site: <http://www.raytheon.com> }

For more information see: *Inside the Air Force* "NPOESS Ground Segment Links With Windsat Coriolis Weather Satellite," 9 July 2004



NPOESS in the News — NOAA News Release, July 27, 2004

NOAA, PARTNERS HAIL MAJOR SPACE COMMUNICATIONS BREAKTHROUGH

- A new, high-speed data chipset is poised to move communication in space 100 times faster than existing integrated circuits used in space. National Oceanic and Atmospheric Administration officials today said the chipset, developed as the first of its kind for space applications, will be used in the future National Polar-orbiting Operational Environmental Satellite System (NPOESS) set to launch in 2009. NOAA is an agency of the U.S. Department of Commerce.
- "This new chipset has the potential to catapult space-based communications and data transfers to a level not seen before," said Gregory W. Withee, assistant administrator for NOAA's Satellites and Information Service. "Using this chipset technology aboard NPOESS spacecraft, for years to come, will give us reliable data about long-term changes in the environment."
- The Integrated Program Office (IPO), which is a team of engineers from NOAA, NASA and the Department of Defense (DoD), began the development phase in February 2001, then contracted with Northrop Grumman to produce the new chipset and enabled it for use in space. Together, the IPO, Northrop Grumman and industry teammates delivered a space-qualified chipset and associated software. The chipset, working with its software driver, can move data at speeds of 100 million bits per second. The chipset is designed to the Institute of Electrical and Electronics Engineers (IEEE 1394) standard. IEEE 1394 technology is commonly used in the commercial transport of audio-visual data, including digital television, graphics-intensive video games and digital photography. "The entire industry team worked together in a very collaborative manner to make this first-time space-qualified capability a reality," said Frederick L. Ricker, vice president and NPOESS program director for Northrop Grumman Space Technology. "This chipset permits plug-and-play networking between sensors and the spacecraft, so it was important that all parties to this network participate fully in the design and test of the chipset hardware and software."
- NPOESS will combine existing NOAA and DoD polar-orbiting satellite systems under a single national program. Polar-orbiting satellites are key in collecting data on the Earth's weather and environment, which help scientists develop long-range weather and climate forecasts.
- "Hosting the NPOESS command and data handling system on a 1394 network offers real advantages beyond traditional, point-to-point data connections," said John D. Cunningham, IPO system program director. "Because 1394 technology supports a range of different speed rates for data communication, the chipset will help NPOESS stay limber and adapt easily to communication needs in the future."
- NOAA Satellites and Information Service is the nation's primary source of space-based meteorological and climate data. It operates the nation's environmental satellites, which are used for weather and ocean observation and forecasting, climate monitoring and other environmental applications, including sea-surface temperature, fire detection and ozone monitoring.
- The agency also operates three data centers, which house global databases in climatology, paleoclimatology, oceanography, solid Earth geophysics, marine geology and geophysics and solar-terrestrial physics.
- NOAA is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and providing environmental stewardship of the nation's coastal and marine resources.

###Robert C Hansen <Robert.C.Hansen@noaa.gov>

- On the Web: NOAA: <http://www.noaa.gov>; NESDIS: <http://www.nesdis.noaa.gov>; IPO: <http://www.ipnoaa.gov>

Editor's Note: The organizations involved in this 1394 effort in chronological order are:

- | | |
|---|---------------------------|
| •The IPO (DOC, DOD, NASA) | •Christek - Connectors |
| •Aeronix - Designers/Developers | •Tyco - Connectors |
| •UTMC which became Aeroflex - Foundry service | •Honeywell SSEC - Foundry |
| •MRC (aka Mission Research Corporation) - APHY Designers | •Mindready - Software |
| •TRW which became NGST - SSPR Contractor provided Validation work | |

Raytheon NPOESS Organizational Announcement

Mike Mader, Raytheon VP & NPOESS Asst. Program Director, made the following announcement on August 5, 2004:

"In response to NGST reorganization of ST&E, SE, and SI, Raytheon has also reorganized to more clearly define roles and responsibilities.

- Gary Johnson** will continue to support SE&T and SI in a deputy role for both Roy Tsugawa and Brian Chappel. His position within Raytheon is as the SE&I lead.
- All science related activities (algorithms, cal/val, science advisory team, etc.) under Raytheon will now report through **Dr. Scott Turek**. Scott will report directly to Keith Reinke, Ground Segments Lead. Scott will also work directly with Bob Hughes in the SE&T organization. Scott is already providing a key leadership role in the science arena for NPOESS, this assignment formalizes many of those roles while adding the management responsibilities for Raytheon. **Suzanna Barth** will transfer from IDPS and work directly for Scott.
- All Raytheon test activities will report through **Bruce Casias**. Bruce's role has expanded from Ground Segments test lead to include System Test responsibilities. In this role, he will work closely with the (to be announced) NGST system test lead under the new SE&T organization. Bruce will bring the disciplined, standardized process that he is already working into Ground Segments test to the System Test role. **Jerry Huller** will continue in his system test role, working for Bruce.
- Please continue to support both Scott and Bruce as they move into their expanded roles on NPOESS."

NPOESS in the News – (Continued)

Raytheon Information Technology & Scientific Services (ITSS) Organization Announcement

by Paul Thompson, ITSS Vice President and General Manager

- Please join me in thanking Vern Patterson for his many years of service to Raytheon, and in celebrating his pursuit of a much-deserved retirement.. Vern helped establish Raytheon's Colorado Springs office in 1992, and since then, has served as site manager and program manager for SETT, SWAFS and NPOESS. Vern will officially retire July 6th, and will continue to support Colorado Springs operations and the rest of Raytheon in a part-time status as a senior scientist. Vern's leadership, scientific and systems expertise, and life experience will be greatly missed.
- Also, please join me in welcoming Dave Fuino to the position of Colorado Springs site manager. His responsibilities include SWAFS II and NPOESS program management, organic growth in the *DOD Space* marketplace, and local business operations. Dave's experience in technical program management, business development and business operations are well-matched for growing RIS presence in the local market. Dave has a Bachelor of Science degree from the United States Air Force Academy and an MBA from Western New England College.
- *The RIS Colorado Springs office is home to 15 full- and part-time Raytheon employees with systems and software engineering; intelligence, surveillance and reconnaissance; and space environment and meteorological sciences experience.*
- **Editor's Note:** The Colorado Springs operations Vern Patterson headed is now part of Raytheon Information Solutions and has focused on the Space Environment and Systems/Software Engineering for the last 12 years. For NPOESS, Colorado Springs is lead on the IDPS Data Quality Monitoring Subsystem, supports the Cal/Val efforts on the Space Environmental Sensors, and will convert the Space Environmental Sensor research algorithm code into operational code when it is delivered from the sensor vendors. -- MLJ

Sensor Subs: by Dave Gallet, ITT CrIS Manager



ITT Industries
Engineered for life

ITT Shares NPOESS Award Fee with Subs, Celebrates



- Following receipt of the NPOESS 2003 Supplier Award which included a cash prize, ITT A/CD management wanted to reward the entire team for this remarkable accomplishment. Lou Dollive, A/CD President & General Manager, wanted to extend the entire cash award to the entire CrIS project, which not only included ITT personnel at their Fort Wayne, Indiana Facility, but to also extend this award to the CrIS project's major subcontractors whom contributed a major portion of the CrIS programs success. To reward the ITT CrIS program personnel, a grand event was held for the entire CrIS project team and there significant others. The event which was held at the Coliseum in Fort Wayne, Indiana included a wonderful dinner, followed by a casino Monte Carlo theme where everybody played games to win chips, which in turn, generated raffle tickets for the many prizes offered. Around 200 employees and others attended this event where more than 50 prizes ranging from televisions, gas grills, digital cameras, other electronic equipment, and many different kinds of gift certificates. This celebration was a huge success and many compliments were received from the employees following the event. There is even an anticipation that the CrIS team must strive to win the NPOESS 2004 Supplier Award so this event can be repeated again!
- Also in conjunction with rewarding the ITT CrIS personnel, the CrIS project is awarding each of their major suppliers for their contributions to the CrIS programs success. The subcontractors being recognized to share with this award are as follows; **ABB Bomem** in Quebec City, Quebec, **DRS Sensors & Targeting Systems** in Anaheim, CA, **Rockwell Scientific Company** in Camarillo, CA, **BEI Technologies** in Maumelle, AR, **Axsys Technologies** in Cullman, AL and Rochester Hill, MI, **Honeywell Space & Electronics Systems** in Glendale, AZ, **Aeroflex** in Long Island, NY, and **Kaman** in Middleton, CT. "Each of these major subcontractors have contributed greatly to the success of the CrIS project over this past year", says Dave Gallet, CrIS Program Manager for ITT. "We are very fortunate to have the dedication and commitment that these companies continue to provide ITT and it just goes to show that a strong team effort shared by all companies involved is the key to our success".



Higher-quality versions & more photos can be found on eRooms at: [My eRooms > Program Office > NPOESS Newsletter & Photos > Additional Photos](#)

International Intrigue:

Lars Prahm Takes Over as new Director General at EUMETSAT



Darmstadt, 31.07.2004 – On Friday, July 31, 2004, Dr. Lars Prahm officially takes over EUMETSAT from Dr. Tillman Mohr. In Dec 2003, the EUMETSAT Council appointed Dr. Lars P. Prahm as new Director General at EUMETSAT. Dr. Prahm, who has directed the Danish Meteorological Institute (DMI) since 1990, will start his new function as of 1 August 2004. He succeeds Dr. Tillmann Mohr who has guided EUMETSAT since 1995 starting with the transition to a fully operational organisation with the Meteosat weather satellite operations to the successful development of the Meteosat Second Generation and the launch of MSG-1 in 2002.

“I am very much looking forward to my new responsibilities as Director General of EUMETSAT,” said Dr. Prahm following his nomination by Council on Tuesday. “I am proud to serve the EUMETSAT community of European states putting forward my expertise in meteorological research and space services”.

•A Danish citizen, Dr. Prahm has served as Director of the Danish Meteorological Institute and has been the main driver in the unification process of three weather services in his country: Military, Civil Aviation and General Weather Service. A physics graduate and doctorate meteorologist in the late seventies, he has strongly shaped meteorology in Denmark in his various functions in environmental research and as member and chairman of various Danish and international scientific-technical councils. {European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) News Release 15/03 (partial)}

EUMETSAT

•EUMETSAT's mission is to deliver cost-efficient operational satellite data and products that satisfy the meteorological and climate data requirements of its Member States, taking into account the recommendations of the World Meteorological Organization.

•The images and the data from Meteosat weather satellites make a significant contribution to weather forecasting and to the monitoring of the global climate and the environment.

•EUMETSAT is an intergovernmental organisation that establishes and maintains operational meteorological satellites for 18 European States (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey and the United Kingdom). EUMETSAT also has five Cooperating States (The Slovak Republic, Hungary, Poland, Slovenia and Croatia). Agreements with Serbia and Montenegro (former Republic of Yugoslavia) and Romania have been signed, and upon ratification by their Governments, they will become the sixth and seventh Cooperating States.

New US-India Cooperation on NPOESS Announced

INDIA NEWS

•India, US to work on new remote sensing satellite

•25-June-2004

•Bangalore, India : India and the US will collaborate on the next generation environmental satellite engaged in remote sensing from a polar orbit.

•The proposed collaborative project on space-based earth observation was made here Friday on the fifth and concluding day of the Indo-US Conference on Space Science, Applications and Commerce.

•The Indian Space Research Organisation (ISRO) and the National Oceanic and Atmospheric Administration (NOAA) of the US will work on the national polar-orbiting operational environmental satellite system (NPOESS).

•According to the timetable agreed upon by the premier space agencies of both countries, the NPOESS launch is expected in 2009.

•"The new remote sensing satellite will provide rapid distribution of global and regional environmental imager, meteorological, climatic, terrestrial, oceanic and solar-geophysical data for use by the international community," a joint statement from ISRO and NOAA said.

•Data from the new satellite system will assist in the timely prediction of cyclones, support disaster management effort and benefit the development and management of agriculture, fisheries, maritime industries and other economic sectors.

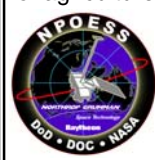


ISRO delegation (left) headed by Chairman G. Madhavan Nair (center left) and US delegation (right) led by Jack Kelly, DOC Dep Undersecretary Oceans & Atmosphere (center right)

Mike Mader, Raytheon; Frank Hinnant, IPO; Kelly Turner, NOAA; Mara Browne, NESDIS; and Dave Lubar, Raytheon (facing).



Right: Lubar (1); Mader (2); Greg Withee, NESDIS/AA (3); Browne (4); Hinnant (5); and Fred Ricker, NGST (6) with ISRO officials.



Team Scrapbook – IPO Spring Picnic



IPO Spring Picnic, Friday May 14, 2004, at the Walter Reed Army Medical Center Annex,
Forest Glenn, Silver Spring MD

Higher-quality versions & additional photos can be found on eRooms at:

[My eRooms](#) > [Program Office](#) > [NPOESS Newsletter & Photos](#) > [Additional Photos](#)



•Team Scrapbook – IDPS/FTS IPT Team-Building Golf Event, June 17, 2004



Karen St. Germaine & Bill Munley, event judges



The Courses at Andrews
Air Force Base



Start Your Engines!



Bill Sjöberg, John Sapper,
Carolyn Whitaker,
Chris Olsen



Lou Robinson,
Dave Edwards,
Joann Stauch,
Dave Hammond



Jon Mulligan,
Jane Whitcomb, Tom Miller,
Joe Mulligan



Tom Konchan, John Prowell,
Carl Hoffman, Bonnie Reed



Pam Emch, Bill Thomas,
Chris Pate, Gary Mineart



Mike Bonadonna, Miles
Stokes, Dave Morel,
Joe Zajic



Greg Pierce, Tom Bucher,
Bruce Thomas



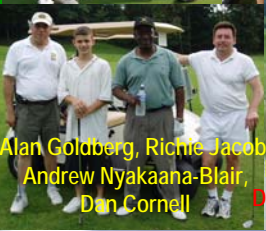
John Overton, Carrie Root,
Bobby Miller, Richard Sikorski



Jeff Williams, Steve Simone,
Dorlisa Hommel, Scott Turek



Nick Demidovich, Markus Sorrels,
Mike Crison, Eric Miller



Alan Goldberg, Richie Jacob,
Andrew Nyakaana-Blair,
Dan Cornell



Bob Rank, Mike Berganski,
Dave Sanderson, Wofsy, Paul



Frank Hinnant, Larry Key,
Cyrèse Brooks, John Phillips



Munley instructs
St. Germaine



Joe Garbrous,
Curt Davis Jr,
Curt Davis Sr.



St. Germaine &
Mulligan



The
approaching
storm!



Weatherman's Luck: Rained out on the 13th Hole!



Munley, Mulligan,
St. Germaine
& Jacob-
Whitcomb
announce
& award prizes.



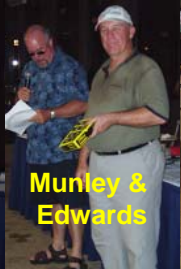
The Jacob-Goldberg-Cornell-
Nyakaana-Blair team



Turek



Goldberg



Munley &
Edwards



Bonadonna



Bucher



Hinnant kidded
by Munley
& Mulligan



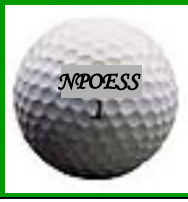
Proud mother,
Jane Jacob-
Whitcomb,
watches son,
Richie, get
prize



Mulligan, Jacob-
Whitcomb, & St.
Germaine prepare prizes.



Cyrèse
addressing...

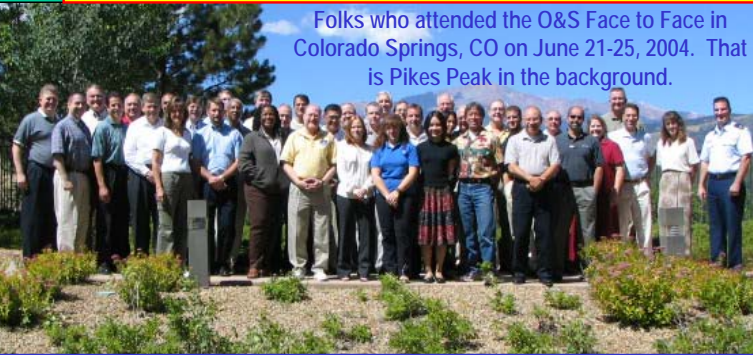




•Team Scrapbook – Continued



ITT CrIS Project Team's Casino-Monte Carlo Event (see p. 16 story)



Folks who attended the O&S Face to Face in Colorado Springs, CO on June 21-25, 2004. That is Pikes Peak in the background.



JR Parsons (L) & Curtis Stutz (R)

Pin-On Ceremony for (new) USAF Captains J.R. Parsons & Curt Stutz at the IPO on July 9, 2004



Bonni e "Carmen Mi randa" Fol ker



Raytheon-Aurora NPOESS Summer Pi cni c Jul y 23, 2004

Team Scrapbook – International Travel Log



June 2004 NPOESS C3 Equipment Installation at Svalbard, Norway



SafetyNet Visit to South Korea, June 1-10, 2004



Bangalore, India Visit associated with India-US Space Science Conference, June 21-25, 2004